

CO₂ Capture & Storage Ready, Set, GO



David G. Hawkins, NRDC
May 2005

CCS: Deployment Must Begin Now

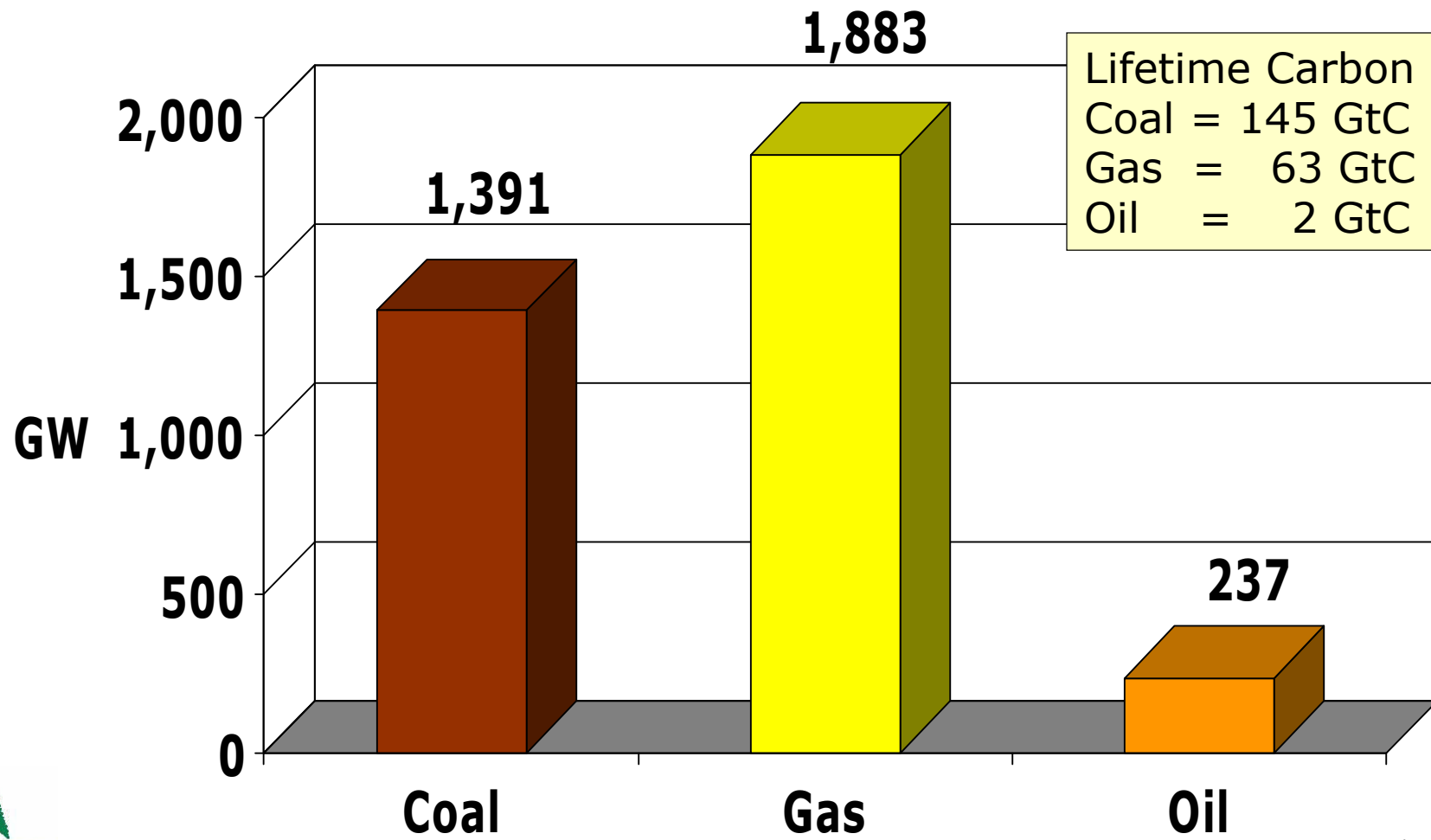
- Further delay will increase climate protection costs.
- Further delay will not reduce technology costs.
- Impacts on electricity prices are modest.

Investments Today Drive Impacts Tomorrow

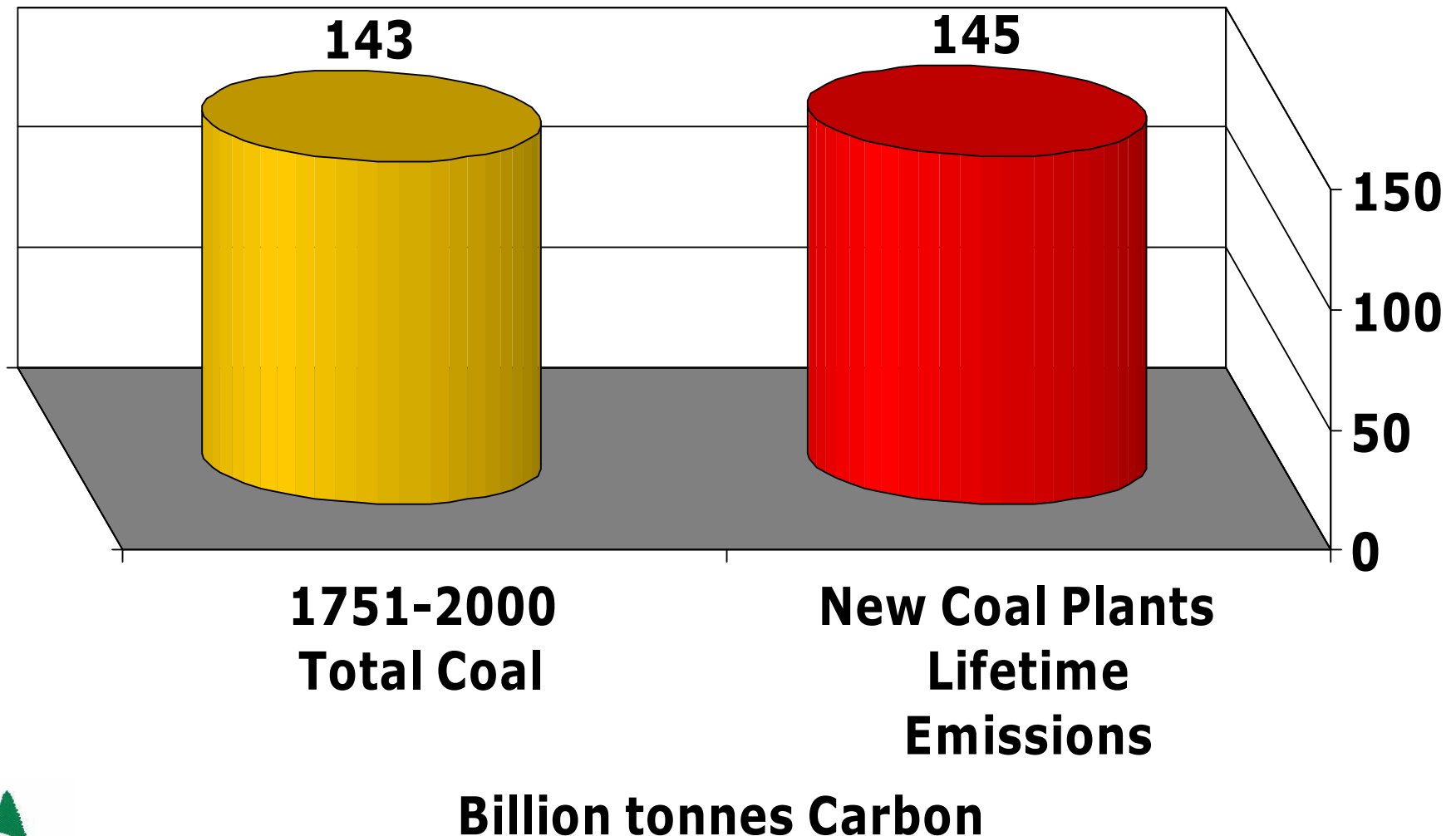
- Investments drive emissions
- Emissions drive concentrations
- Concentrations drive temperature forcing
- Forcing drives impacts

Carbon Lock-in

New Fossil Units 2003-2030

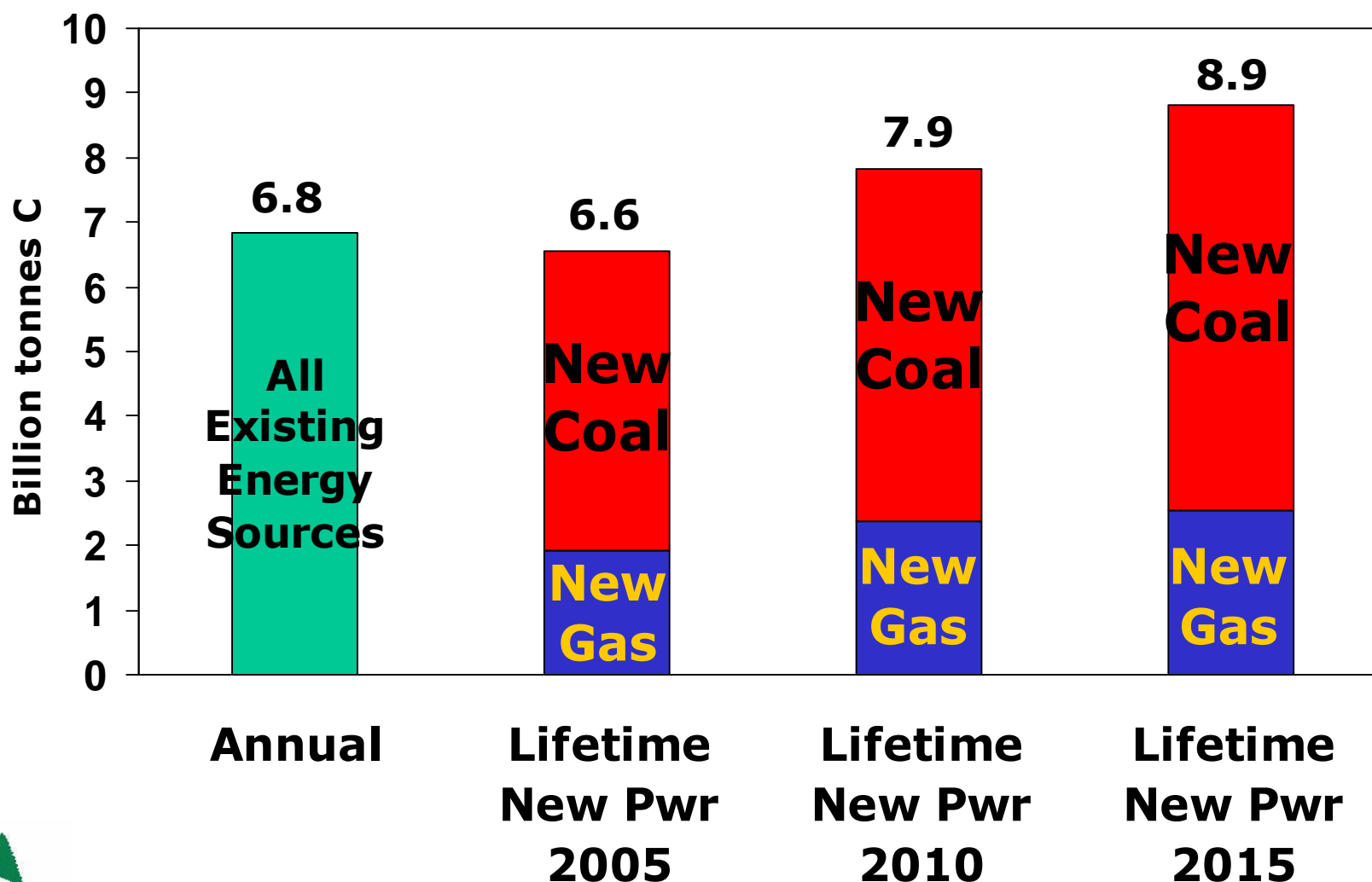


New Coal Plant Emissions Equal All Historic Coal CO₂

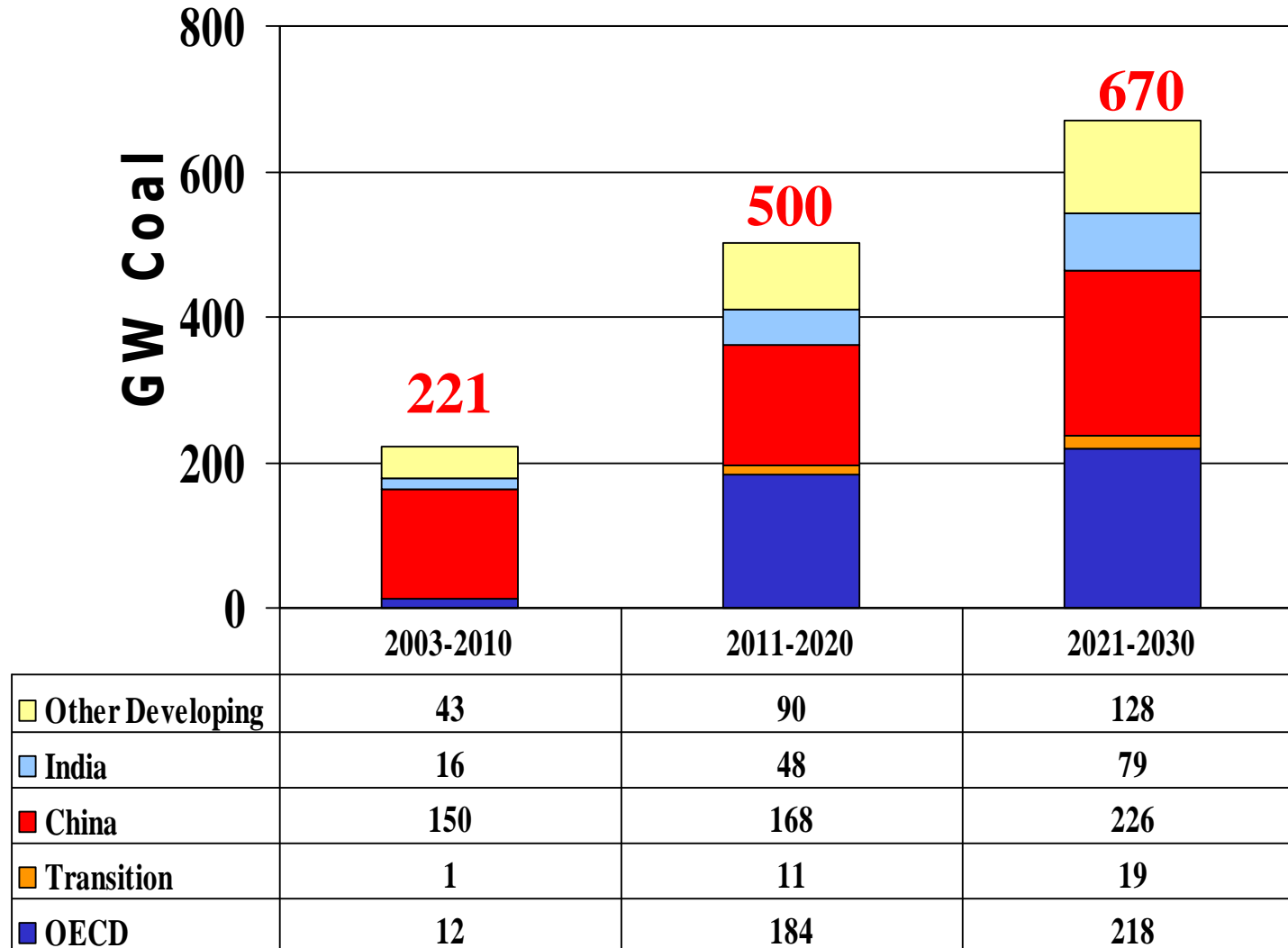


Annual Carbon Commitment

Lifetime Emissions of Annual New Fossil Investment



New Coal Build by Decade

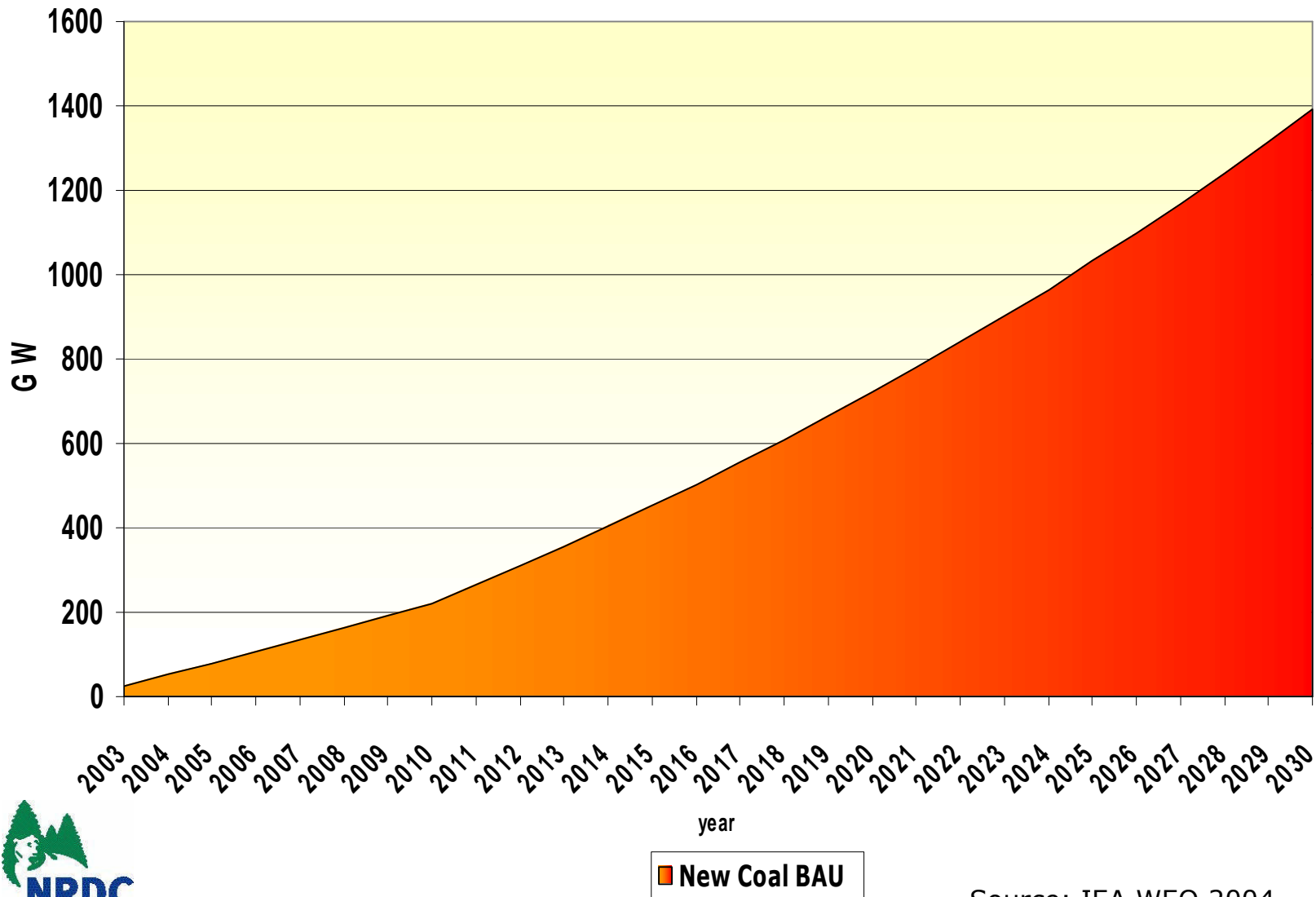


Incremental new coal capacity by decade

Source: IEA, WEO 2004

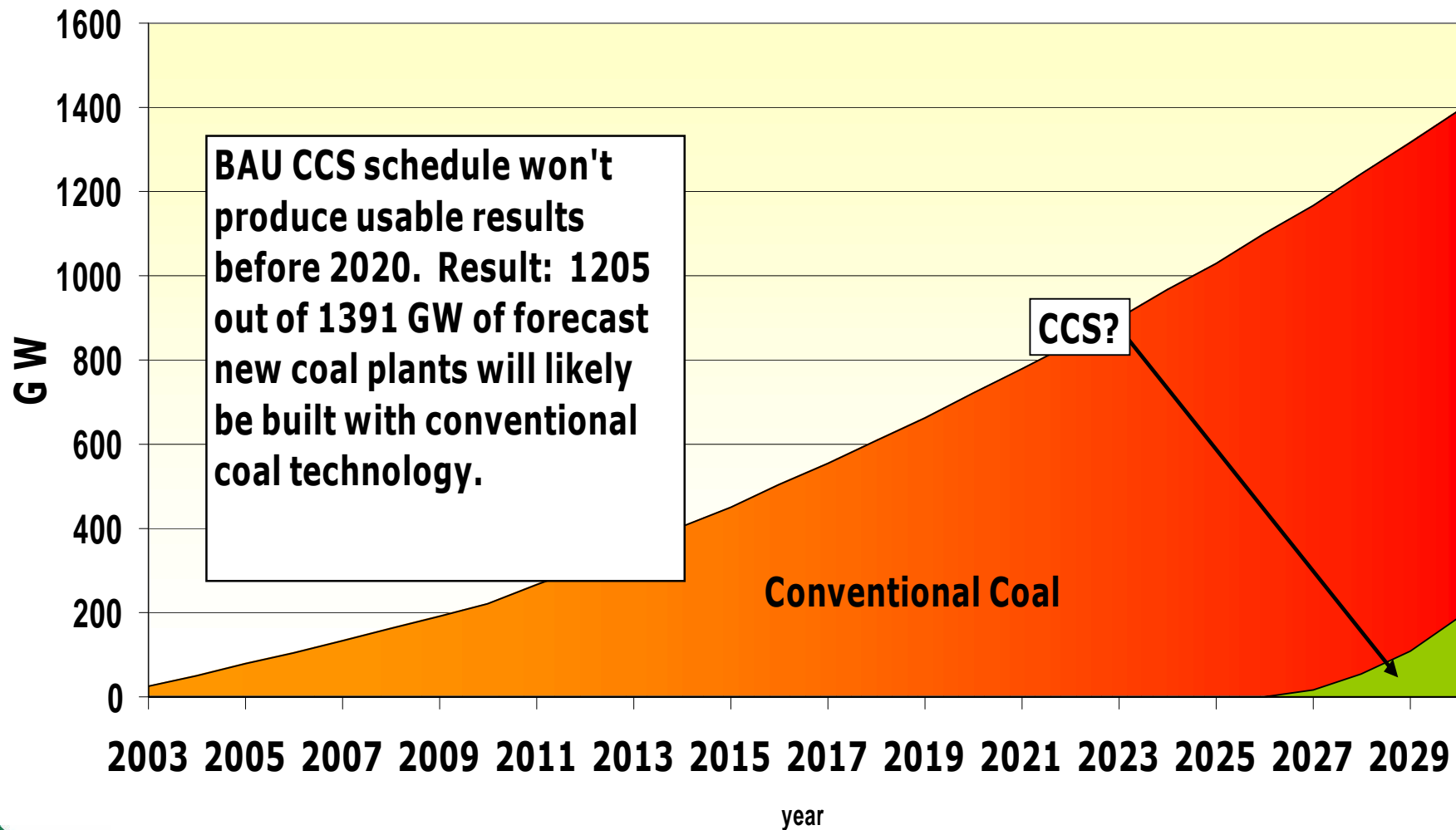
BAU Means Carbon Lock-In

IEA New Coal Forecast



BAU Means Carbon Lock-In

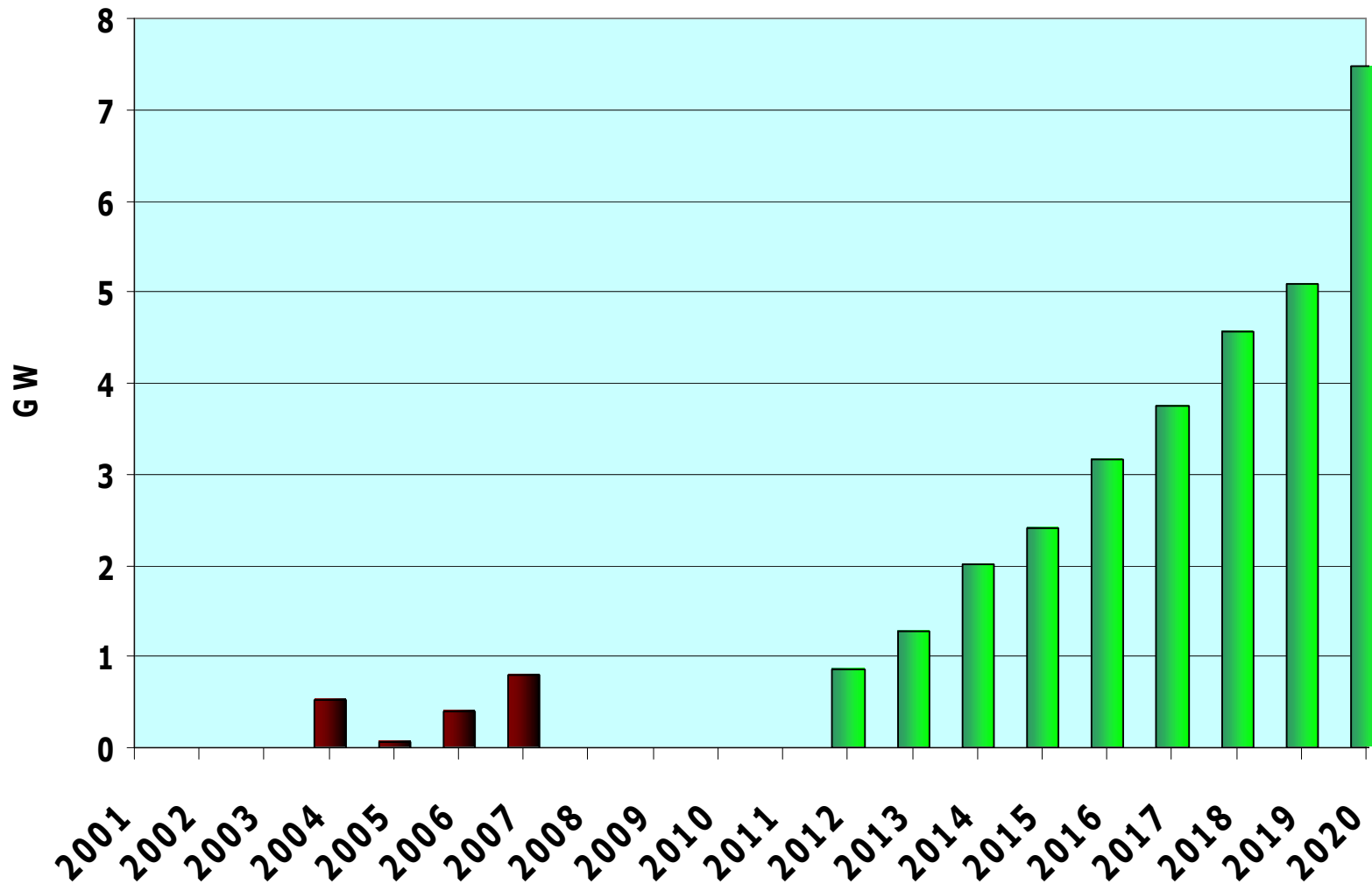
IEA New Coal Forecast



CCS Deployment Initiative

- Deploy CCS at new coal plants with on-line dates of 2012 and later.
- Using EIA AEO 2005 ref. case, this would require 1GW of CCS coal in 2012, with cumulative CCS capacity of 31GW by 2020.

U.S. Coal CCS Deployment Schedule



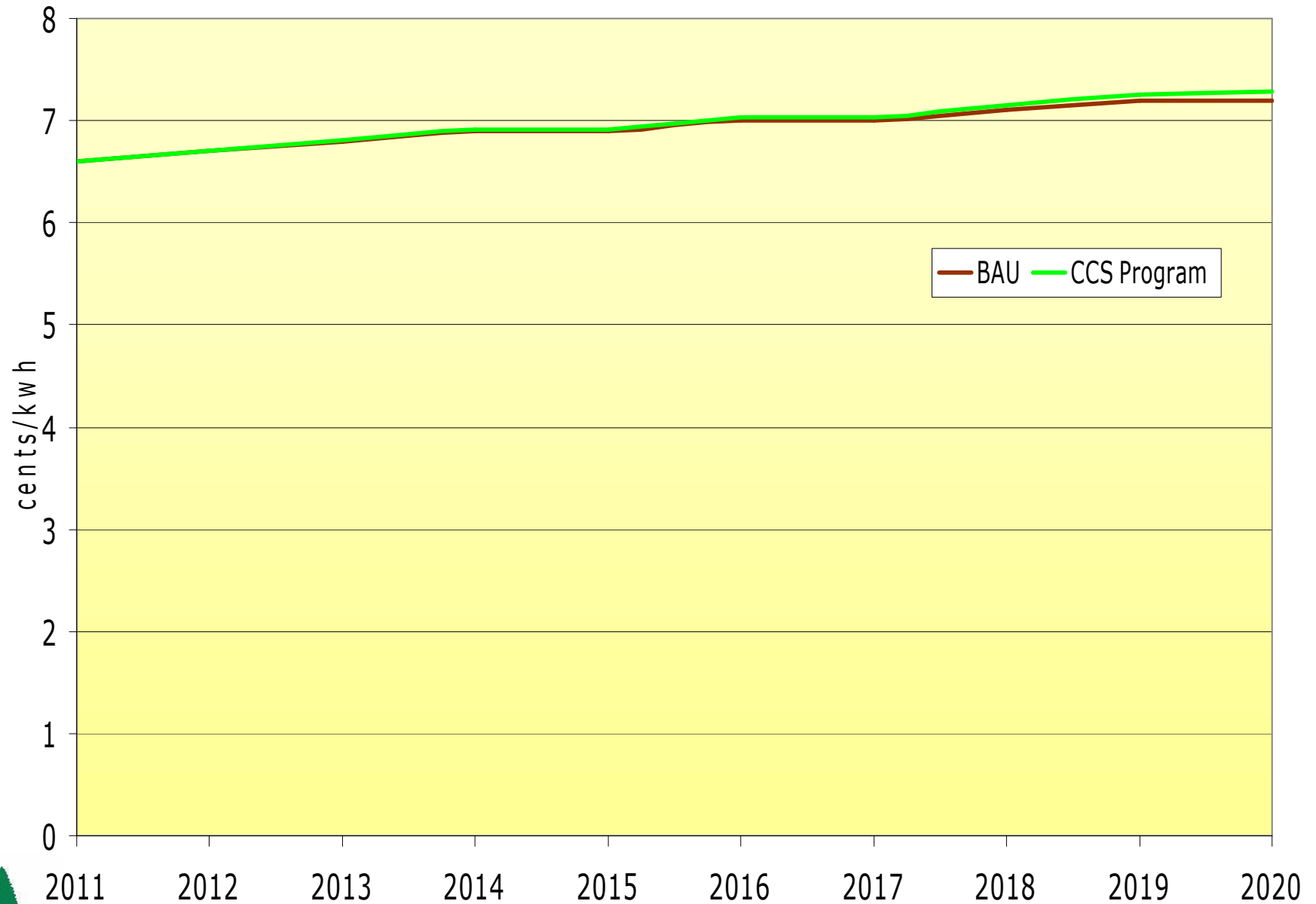
Carbon Intensity Portfolio Standard

- Starting 5 years from now require a growing fraction of U.S. electricity sales to come from supplies with CO₂ intensity < 250 lbs/MWh.
- Fraction set to cover U.S. ref. case coal build plus agreed target for renewables.

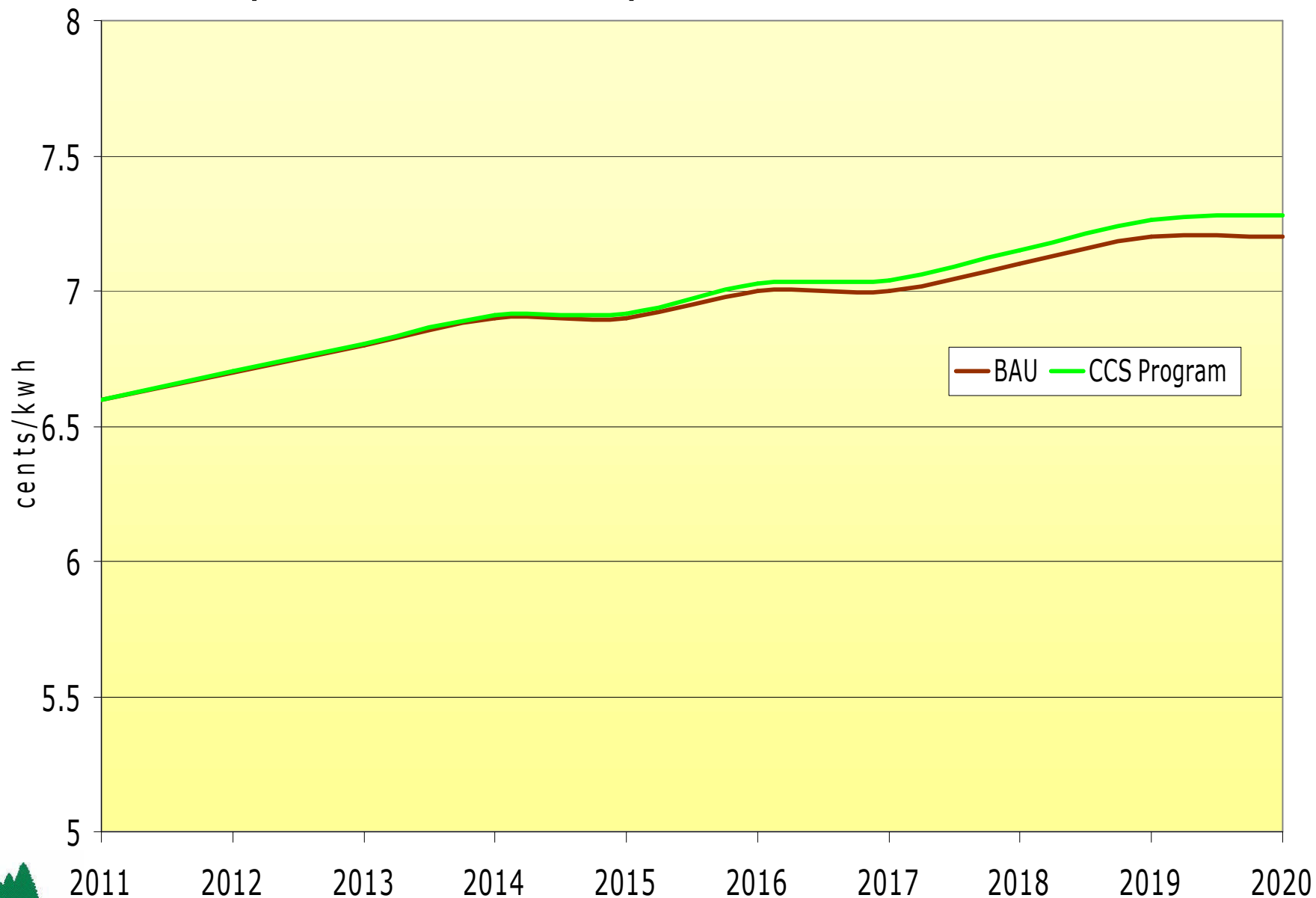
Costs of CCS Deployment

- Based on Foster-Wheeler study (2003) for IEA: incremental cost of electricity for CCS < 2 cents/kwh, declining to about 1 cent by 2020.
- Assuming NO learning, levelized discounted costs to 2020 are \$1.1 billion annually.
- Retail price of electricity increase in 2020 < 0.8 mills/kwh.

Impact of CCS Proposal on Retail Rates

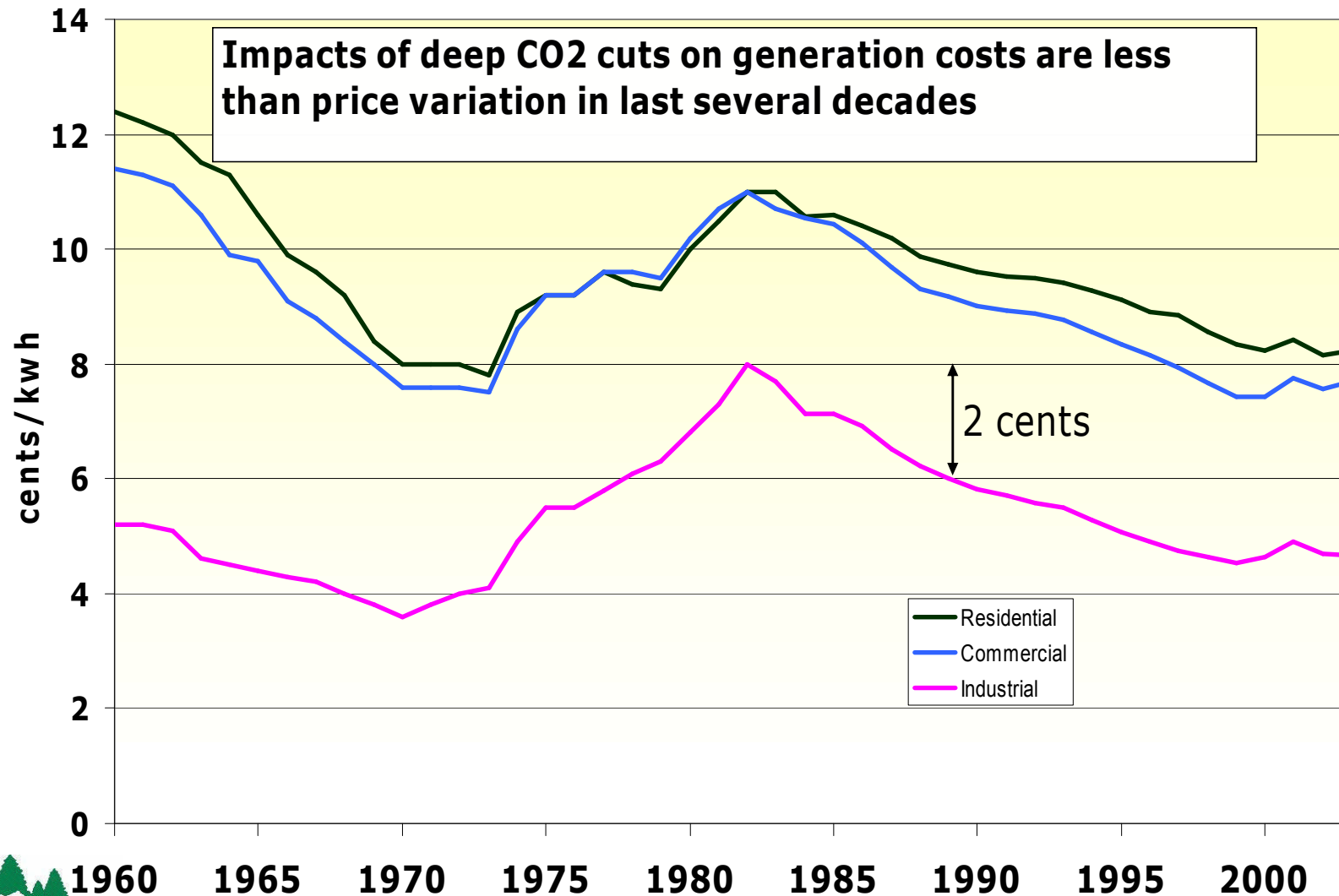


Impact of CCS Proposal on Retail Rates



US Real Electricity Prices (2000 \$)

(EIA, AER 2003)

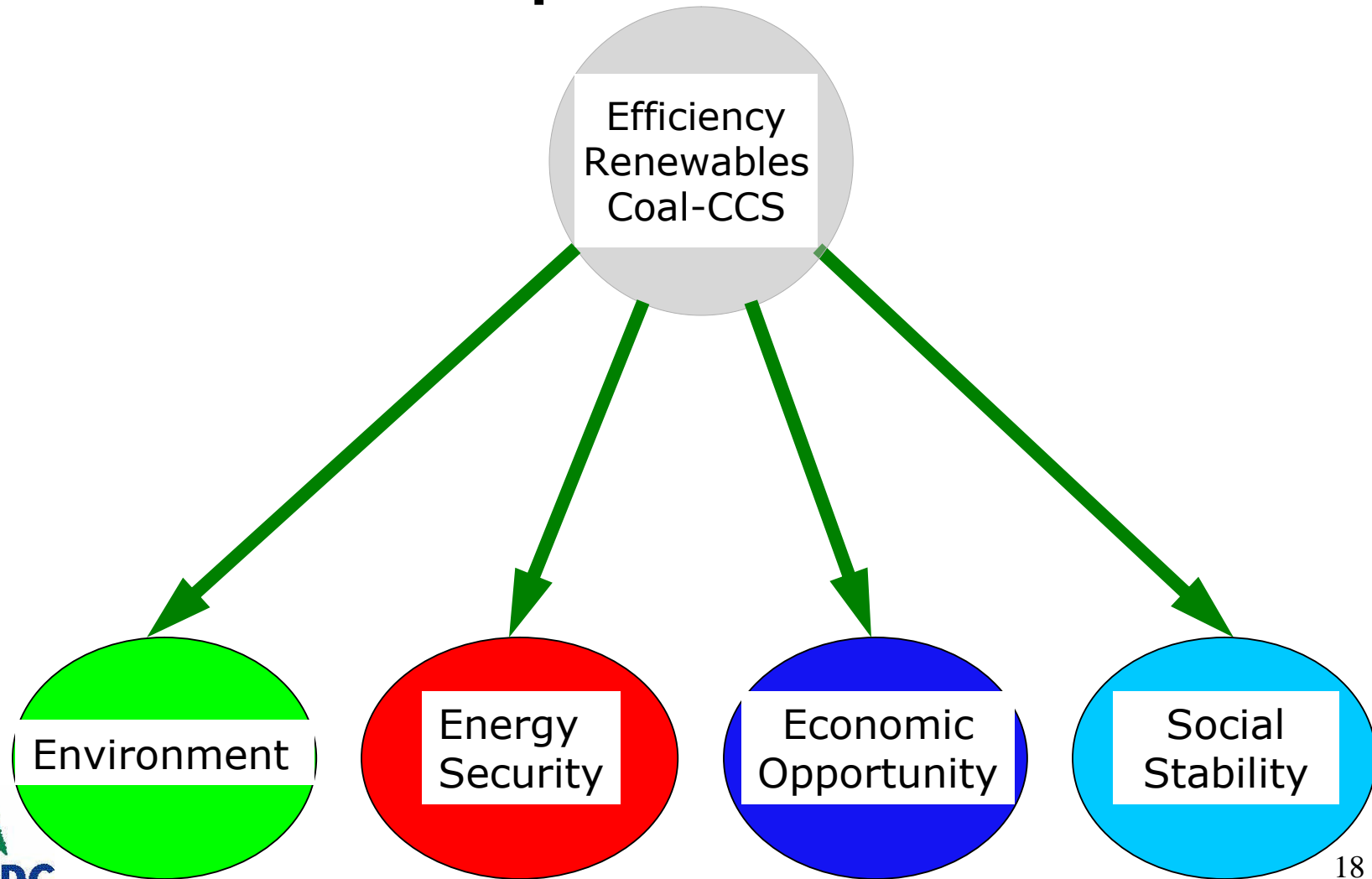


After
David Keith,
U. Calgary

A Grand Bargain is Possible

- Clear, binding, long-term path for US GHG emissions
- With major new public investments to promote domestic energy resources that enhance security, produce economic development, and address the threat of global warming:
 - Efficiency—no one can take it away;
 - Wind, solar, biomass—home-grown;
 - Coal, **IF** its carbon is captured and permanently stored underground.

Multiple Benefits



Warming Won't Wait. Will We?

